

Hoopa Valley Tribal EPA T.E.P.A.



Performance Partnership Grant (PPG) FY03 End of the Year Report



Prepared by the Hoopa Valley Tribe
November 15th, 2003

Preface

This report summarizes work performance and tasks completed under the 2003 Performance Partnership Grant (PPG). The 2003 report has been prepared by the Hoopa Valley Tribal EPA (TEPA) in accordance with PPG rules and guidelines. This report is result oriented. The results of accomplishments are represented in visual form, narrative documentation and graphical illustration of the data. While the report covers a wide range of activities completed under the PPG program, it does not specifically focus on individual tasks as outlined in the PPG 2003 work-plan. Rather, TEPA has decided to highlight the most noteworthy and meaningful achievements that directly benefit the environment and surrounding community.

Below is a list of the Land Management/TEPA staff who worked diligently in making the Hoopa FY02 PPG Program a success.

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Cover Page: Falls in Upper Mill Creek (Considered Sacred to the Hupa)

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Introduction

The Hoopa Valley Tribe (HVT) has administered EPA water protection programs since 1989. Over the past 14 years Hoopa's water program has evolved into a fully functional water protection agency. Major achievements include development and implementation of Clean Water Act (CWA) 106 and 319 projects, establishing background criteria for reservation water-bodies, EPA certification of Tribal water quality standards, and consolidation of CWA grants under the PPG program. Since 1997, HVT has actively participated in the PPG program. This program has allowed the Tribe the flexibility to fund activities that meet Tribal and CWA priorities and goals in protecting reservation waters. Through the implementation of the PPG program the Tribe has developed state-of-science stream and river monitoring stations, located and mapped illegal dump-sites, and identified watershed impairment. The physical, chemical, and biological information gathered from permanent monitoring stations was and is being used in the development of water quality standards that protect ceremonial and cultural designated sites. FY03 marks the 6th full hydrologic year of water quality data collected from surface waters on the reservation (Figure 1). This data exhibits weekly, monthly, and annual trends in key water quality parameters such as turbidity, stream temperature and discharge. TEPA will utilize baseline background conditions in the evaluation of temperature and sediment Total Maximum Daily Loads (TMDL) for reservation tributaries. The Tribe's PPG grant consolidates Clean Water Act Section 106, 319(h) grants and General Assistance Programs under one comprehensive management scheme for the fiscal year 2003. As of September 30th 2003 all tasks outlined in the PPG work plan have been completed and the following illustrations, graphs and narratives highlight project task accomplishments.



Aerial Photo of Hoopa Valley Residential Area

TEPA Monitoring Sites 2003

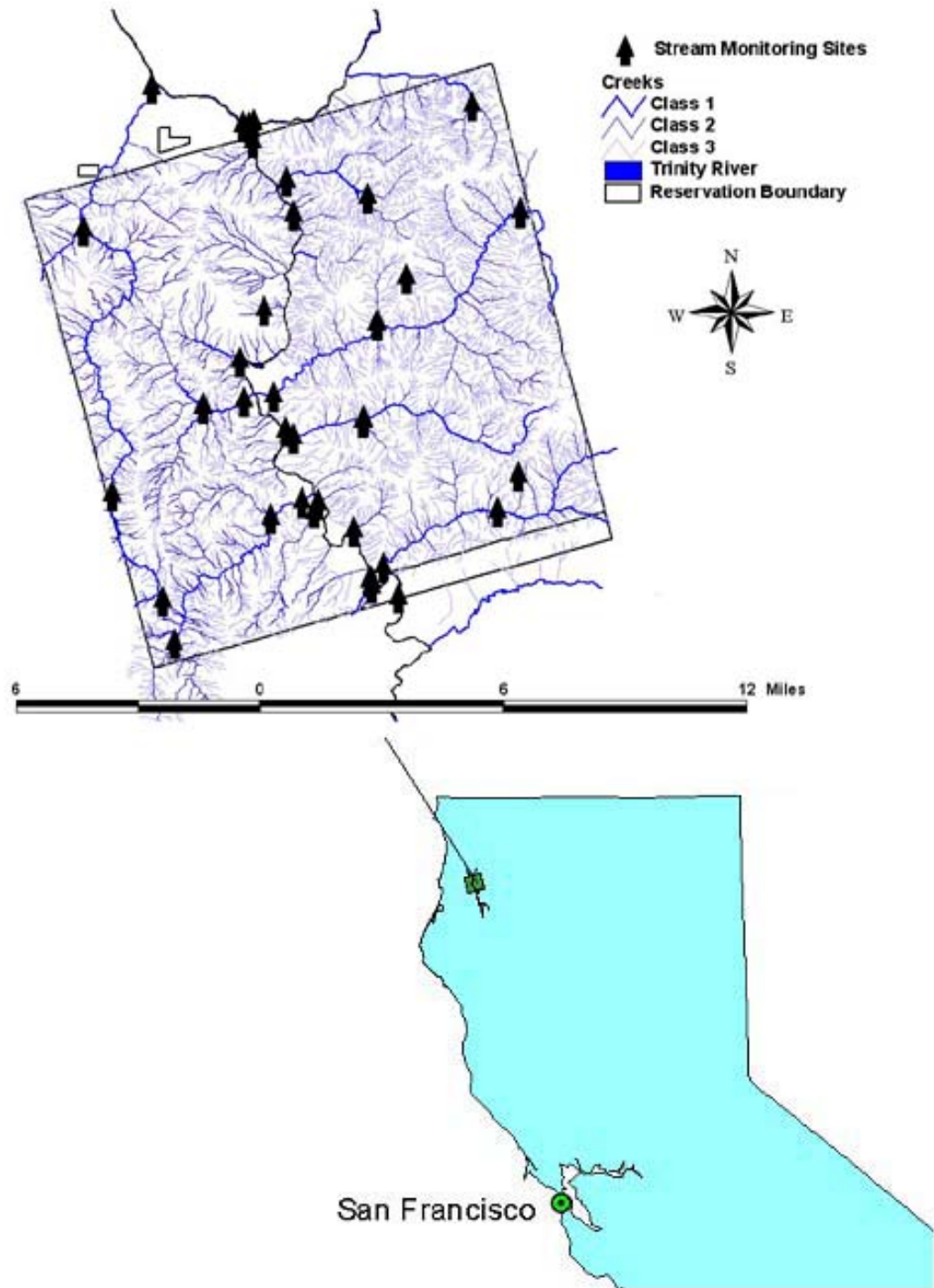


Figure 1- Map Location of Water Quality Monitoring Sites

Solid Waste Management

Since the closure of the HVT's solid waste landfill in 1998, the management of solid waste has become a primary focus of TEPA's environmental protection activities. Over the past 5 years the number of illegal dumps has exponentially increased from 5 to 46 within the reservation boundary. Household garbage and appliances, abandoned automobiles, and animal carcasses are common degraded items found in many illegal dump sites. Unfortunately many reservation watersheds have become accessible dumping areas.



Campbell Creek Illegal Dumpsite

In FY03 TEPA developed a Tribal Solid Waste Ordinance (SWO) that regulates illegal dumping, burning, and proper disposal of solid waste. The SWO was authorized by the Hoopa Valley Tribal Council on February 12, 2003. Implementation and enforcement of the SWO is set up on a three tier approach. TEPA investigates and assesses the illegal activity (i.e. illegal dumping, burning of toxic materials), Tribal police enforces regulatory guidelines, and violators appear in Tribal court for due process. Thus far, backyard burning of household trash has been reduced by 60 percent due to enforcement actions and community out reach campaigns.

TEPA has developed a backyard burning hazard brochure which has been distributed to the 1,015 households within the reservation. The purpose of the brochure is to educate community members on the health hazards of backyard burning and to promote safer waste management alternatives. In addition, TEPA staff has participated in several Tribal radio call-in programs concerning the health risk of illegal dumping and burning household waste.

As trash dumps became more prominent within stream courses and along mountain roads, community members have voiced their concerns to the Tribal leadership and resource departments. Through a combined effort with TEPA, the Public Utilities District and with the United Indian Health Service, a reservation wide illegal dump was assessment was conducted.

Over a 5 day period two crews surveyed all arterial roads within the reservation, encompassing approximately 520 miles. During the survey the two crews assessed and mapped 46 illegal dump-sites. Roughly 55 tons of trash was estimated at all 46 sites. Four of the 46 dumpsites are prioritized for immediate clean-up in FY04. At each of these dumpsites, signs were posted to warn people against illegal dumping and notify the public of the SWO outlawing illegal dumping. For enforcement purposes cameras were set-up at each site to monitor and record illegal dumping activities. Photo records are used to identify responsible individuals and maybe used for enforcement purposes.



Illegal Dump Sign near Supply Creek

Another benefit for completing the illegal dump assessment is to aide TEPA in applying for funding to assist in dump-site cleanup. TEPA has recently secured funds from the California Integrated Waste Management Board through their Farm and Ranch Solid Waste Cleanup and Abatement Grant Program. The grant amount is approximately \$100,000 and will be used to cleanup four illegal dumpsites located within the reservation. The 4 sites that will be cleaned up are found in the Captain John, Hostler, Socktish, and Supply Creek drainages.

Abandoned Auto Clean-up

At the end of August, 2003 TEPA used 319 base funds to implement and complete a cleanup of abandoned vehicles within or near streams, wellheads and groundwater sources. Specifically, TEPA targeted the Socktish Creek drainage where the stockpile of abandoned vehicles adjacent to streams and drinking wells posed a direct and immediate threat to water quality and the health of the surrounding community. TEPA hired a contractor to haul and consolidate all abandoned vehicles to a mobile crusher that moved throughout the Socktish Creek drainage. Before each vehicle was crushed all auto fluids were removed and properly contained. Approximately 367 gallons of toxic pollutants were prevented from reaching Socktish Creek or saturating into the groundwater table. Over all 213 vehicles were removed from riparian areas within this drainage.



Before Cleanup at Sactish Creek



After Cleanup at Sactish Creek

Once the removal of the vehicles was completed, the road entrance to Socktish Creek was gated to prohibit future discarding of abandoned autos into this sensitive watershed. TEPA also recognizes that in order to properly address the abandoned vehicle problem, an appropriate storage location needs to be identified where community members can drop-off inoperable vehicles to be dismantled, crushed, and hauled away. In FY04 TEPA plans to develop and present to the Tribal Council an abandoned vehicle recycle strategy that will allow community members to drop off their unwanted vehicles to a tribally owned auto recycling facility.

Office Paper Reduction Campaign

TEPA continues to strive forward in the management of the solid waste program through the implementation of the office recycling program. Over the past 3 years TEPA has successfully implemented an office paper recycling program within the HVT organization. Since 2001, TEPA has worked closely with Tribal entities throughout the Valley in instituting a Reduce, Re-Use, and Recycle policy aimed at curbing the amount of paper waste generated by the HVT on an annual basis. The HVT is Humboldt County's second largest employer and an estimated 15,000 pounds of office paper waste is produced each year. Since 2001, the amount of paper waste stream generated by the Tribe has steadily declined (Figure 2). This reduction of paper generated is a direct result of the institution of Tribal master e-mail lists, limited postings, recycled content purchasing policies, placement of recycle bins and double sided paper bins, and general education on conservation. We have also successfully been able to recycle over 7200 pounds of paper since 2001.

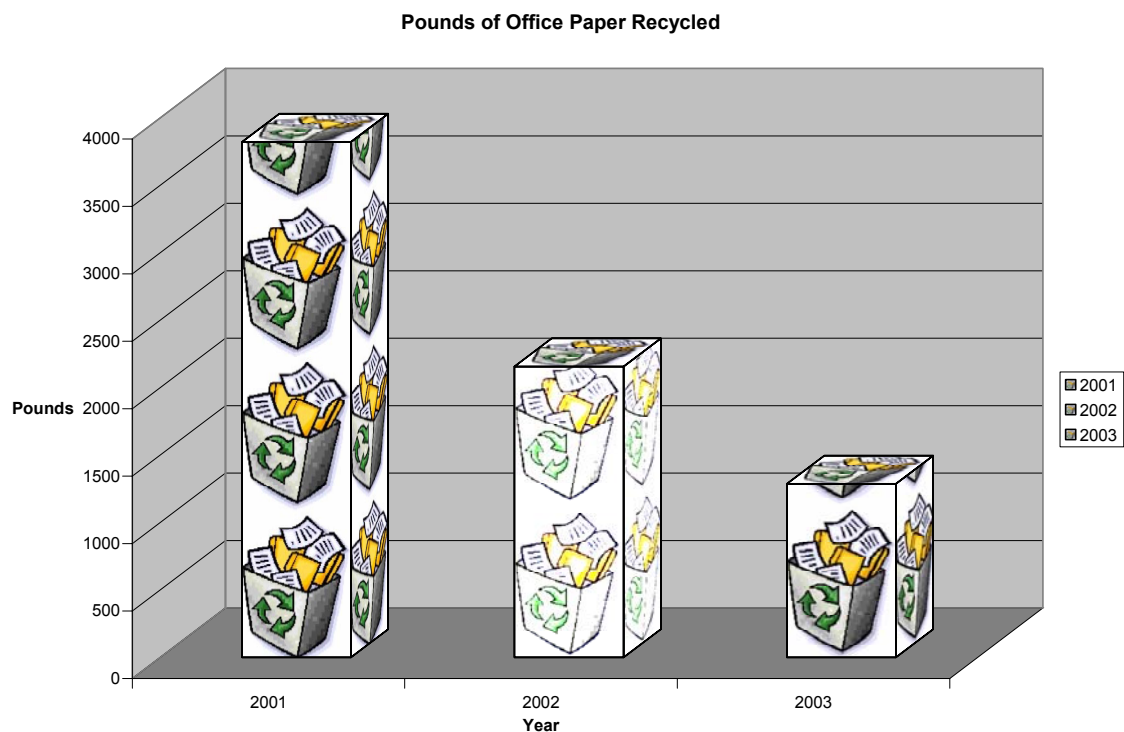


Figure 2- Paper Waste Generated by the Hoopa Valley Tribe in Pounds



Surface Water Protection

In FY03 TEPA carried out its surface water protection program through a three stage approach. The program began with assessment and reporting on water bodies and was followed by identifying impaired waters. The final stage of the program was to develop and implement a recovery plan to remedy the impairments of the defined waters.

Assessment of water quality for reservation streams and the Trinity River is conducted on a hydrologic cycle starting October 1, 2002 through September 30, 2003. Within this period TEPA staff samples for invertebrate communities and maintains Continuous Data Recorder (CDR) stations to comply with QA/QC protocols to assure reliability of the data for making sound management decisions. TEPA maintains instruments that measure and record physical properties in streams as well as physical and chemical constituents in the Trinity River. The results of both Bio-assessments and CDR data are correlated to provide a comprehensive picture of the condition and quality of the various aquatic habitats within the reservation.

Continuous Data Recorder Monitoring

The foundation of TEPA's water quality program is built upon the maintenance and the collection of real time data at 14 CDR stations. Since 1996, TEPA has annually installed CDR stations in 7 anadromous streams within the reservation. In FY04 TEPA staff will install a final CDR station in the upper Pine Creek watershed. Installation of this station marks the completion of the TEPA's Surface Water Monitoring Plan that is design to assess streams for compliance with Tribal water quality standards. Hoopa water quality standards were EPA certified in November of 2002. The data collected from each CDR station is used to distinguish background levels for stream temperature and turbidity, as well as identify impaired watersheds over a 7 year period since 1996. For example, FY03 stream temperature and turbidity data collected in the Mill Creek watershed reveals that summer stream temperatures did not exceed the 68.8 °F protection level, however turbidity levels during winter flows far exceeded criteria needed in protecting the "Spawning" use designation (Figure 3 and Figure 4). This suggests watershed impairment. Therefore a more detailed assessment of the conditions in Mill Creek is needed.

Lower Mill Creek CDR Turbidity WY03

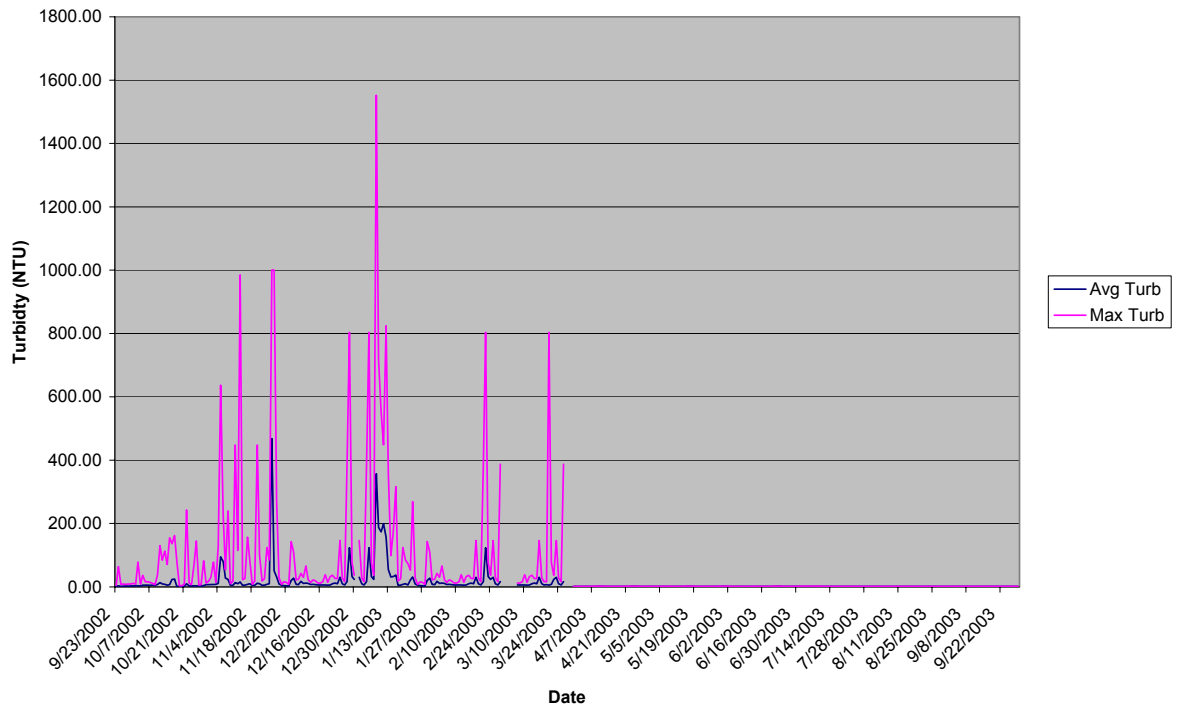


Figure 3- Turbidity Graph

Lower Mill CDR Temperature Data WY03

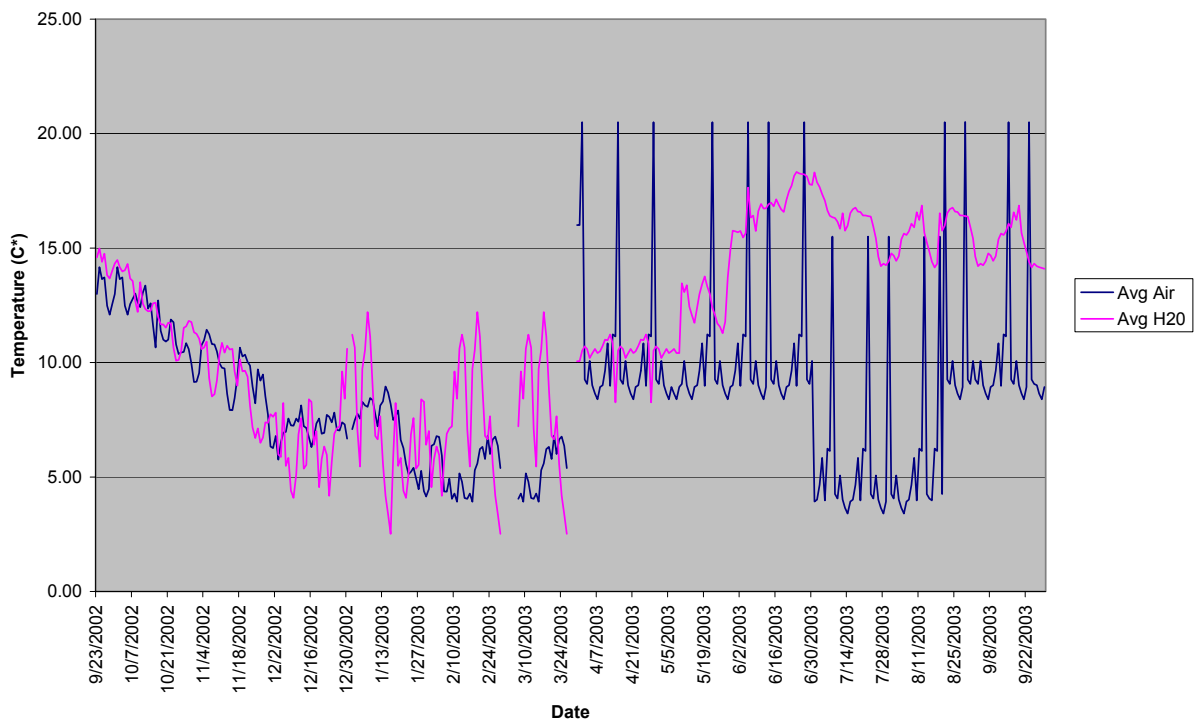


Figure 4- Temperature Graph

Bio-Criteria

The identification of water quality degradation requires appropriate monitoring tools. Such tools help us detect and characterize the cause and source of chemical, physical and biological impairment. Bio-assessments are the primary tool to evaluate the biological condition of a waterbody. Bio-assessments, along with CDR monitoring, are crucial for evaluating the health of a reservation watersheds. Aquatic life integrates the cumulative effects of different stressors such as excess nutrients, toxic chemicals, increased temperature, and excessive sediment loading. Therefore, bio-assessments allow us to measure the aggregate impact of the stressors (Figure 5). Because biological communities respond to stresses over time, they provide information that more rapidly changing water chemistry measurements or toxicity tests do not always produce. As such, bio-assessments provide a more reliable evaluation of long-term biological changes in the condition of a waterbody. The central purpose of assessing the biological condition of aquatic communities is to determine how well a water body supports aquatic life. Bio-assessments reflect the condition of overall ecological integrity (i.e., when the biology is healthy, typically the chemical and physical components of a waterbody are also in good condition). Therefore, bio-assessments directly assess the condition of ecosystem health, a primary goal of the CWA. TEPA has gathered bio-criteria data on its 7 major tributaries over the past 4 years and has incorporated its data into the California version of the EDAS database program to generate stream health indices. The Tribe intends to utilize this baseline data to determine stream health trends over time and describe the impacts of timber operations that affect the aquatic ecosystems. In addition, TEPA will utilize baseline trends in the development of narrative bio-criteria that will eventually be incorporated into the Tribe's Water Quality Standards package. The standards, in turn, are used along with chemical and physical criteria to better manage water resources.

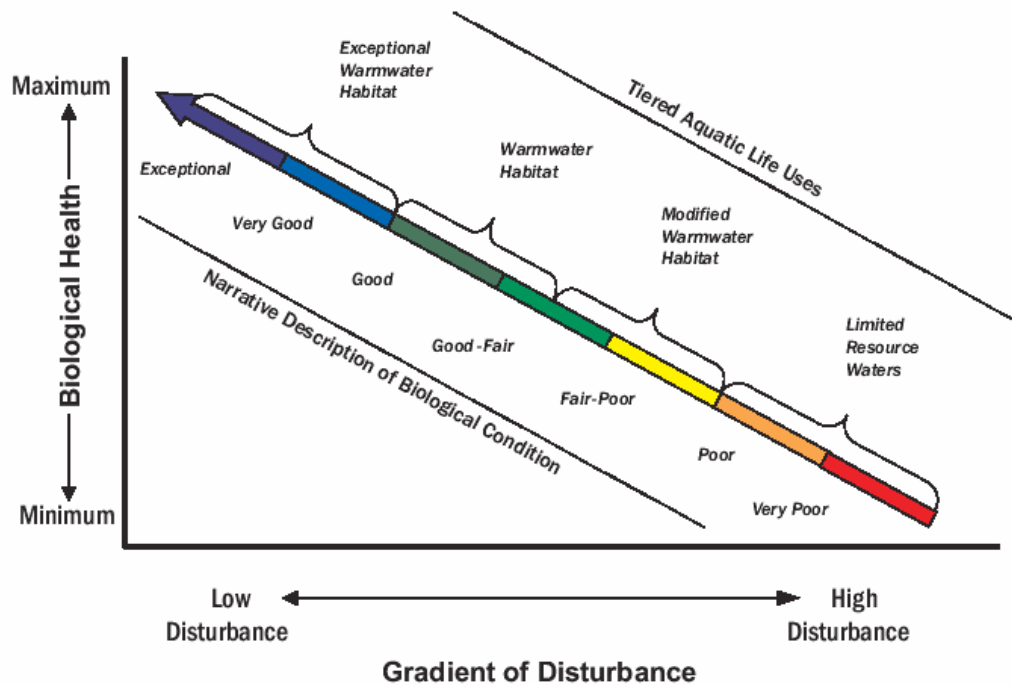


Figure 5- *Bio-Criteria Gradient of Disturbance*

Trinity River Temperature Monitoring

This past summer, TEPA conducted a temperature study in the lower reach of the Trinity River. This study targeted deep pool habitats with an average depth greater than 22 feet. Water temperatures were recorded at 15-second intervals on the surface, mid level, and near the bottom of each pool. The study was implemented at 10 sites during summer flow conditions when water levels are low and air temperatures are high. Results of the study showed that temperatures recorded at the surface of the pool were the same throughout the water column, despite the time of day (whether the temperatures were recorded during the night or during peak solar radiation). Peak summer temperatures of 78°F were recorded at all sample sites. River temperatures of 78°F are lethal for adult salmon survival. These findings will be utilized in determining temperature impairment for this section of the Trinity River and will be listed under the 303 (d) of the CWA.

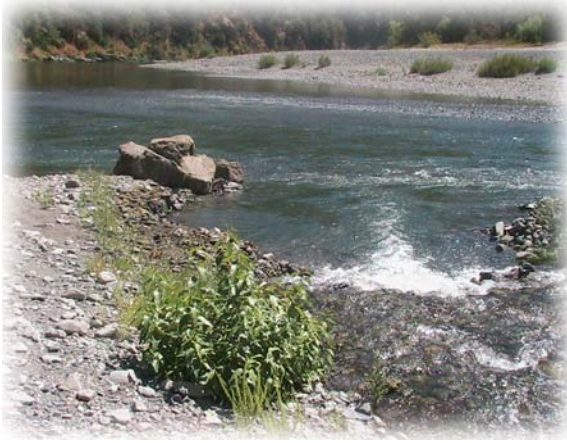


Trinity River Temperature Probe Deployment

Stream Mouth Restoration Project

In response to thermal impairment and limited cold water refugia identified within the lower section of the Trinity River, TEPA completed a Stream Mouth Restoration project funded by a 319 competitive grant award. The purpose of the project was to restore cool water refugia habitat for migrating salmonoids within selected tributaries of the Hoopa Reservation. As anadromous runs of salmon and steelhead migrate through the Trinity River they are now confined to remnant cold water pools seeking refuge and relief from high water temperatures during late summer, low flow conditions.

In late September 2002, a minimum of 33,000 adult salmon, steelhead trout, and other fish species were killed in the Lower Klamath River. According to DFG, U.S Fish & Wildlife Service, and the Yurok and Hoopa Tribes, the death of these fish can be attributed to unnecessary and excessive diversion of water to agriculture in the upper Klamath basin. This created a situation of low flow conditions and warm water temperatures which could not support increased fish densities during migration. Similar in-river conditions have the potential to manifest themselves in the lower Trinity River when low flow conditions can produce marginal water quality and high temperatures.



Stream Mouth Restoration



Cold Water Refugia

Therefore, in order to provide a remedy to this overall situation, TEPA excavated excessive alluvial deposits from the mouths of Supply Creek, Mill Creek, Tish Tang Creek and Hostler Creek within the HVIR in order to provide deep cold water pools and reduce the effects of temperature as a non-point source pollutant.



Klamath River 2002 Fish Kill

Stream Shade Modeling

Over a 2 month period, starting July 1st through the end of August, 2003, TEPA staff completed an extensive survey characterizing riparian conditions in the Mill Creek watershed. From the headwater tributaries to the confluence in the Trinity River, TEPA staff collected stream and air temperatures, stream widths, shade cover, and tree species identification. This information will be used in developing a riparian topographic model. The Riparian Topography model is used to evaluate the influence of riparian cover and shade from the surrounding topography on the stream temperatures in mountainous terrain. The model is computer driven and incorporates GIS riparian coverage, watershed topography, actual stream temperature data and stream flow data to predict instream temperatures as a water body travels downstream. Results

yield real numeric estimates of stream temperatures which are represented by variants in color and viewed as a unique GIS coverage. It is use to predict the effects the removal of vegetation cover on instream temperatures. The model is excellent for predicting and comparing the post project impacts of timber harvesting and the reduction of riparian cover.



Riparian Topography Study

Stream Hydrologic Monitoring

Reservation streams have the capacity to transport an immense volume of sediment; up to 12,000 tons/year for larger watersheds, down to 400 tons/year for smaller sub-watersheds. Since 1996, TEPA has been collecting accurate hydrologic measurements of stream discharge, bed load movement, and suspended sediment transport in 7 reservation watersheds. Each winter TEPA staff devotes a significant amount of time collecting and evaluating stream hydrologic data. Hydrologic data provides information for evaluating up-slope anthropogenic activities, water-treatment cost, sediment-storage requirements, and the quality of aquatic resources. This data is also important for assessing the distribution and transport of toxic substances because many trace metals, pesticides, and other organic compounds are absorbed to particulate material in water. In addition, the information gathered as a result of these monitoring efforts aids the Tribe in the development of sediment and temperature TMDL's. TMDL development serves the dual purpose of establishing Tribal water quality goals for specific water bodies and serving as the regulatory basis for the establishment of water quality-based treatment controls.



Sediment Discharge at Campbell Creek

Watershed Erosion Prediction Project (WEPP)

In order to assess land management erosion impacts and sedimentation to streams, TEPA conducted a thorough analysis of cumulative watershed effects using an erosion prediction model. The WEPP Model is a data exercising tool used to estimate the amount of sediment run-off generated from forest roads. It uses specific criteria such as road surface type, gradient, elevation from streams and % out-sloping. Combined with local rainfall data, these criteria are input to the model which calculates the (tons of sediment/per year) for each road type. Data entries are usually run for 1, 5 and 10 years to compare results over time. A total yield of sediment is added up for the selected miles of road. This figure is used to compare the effects of timber harvest and road betterment based on the amount of sediment generated before and after the project, assuming all best management practices have been implemented. Combined with real time water quality data the WEPP model is an excellent tool for evaluating and tracking the effects of timber management on water quality in mountainous terrain. TEPA also uses WEPP to test the effectiveness of sediment TMDL allocations, Tribal Water Quality Standards, and forest management guidelines.



Erosion Run Off

Klamath/Trinity Basin Water Quality Workgroup

This workgroup meets on a quarterly basis and consists of Tribal, Federal and State Water Quality professionals that share a common interest in the protection in water quality in the Klamath/Trinity River Basin. The workgroup focuses on a coordinated effort that identifies and resolves water quality standards issues that impact all stakeholders.

Environmental Youth Camp

During the first week in September, TEPA coordinated an environmental youth camp for the purpose of developing an annual educational event with a 14-18 year old target audience. The camp exposed the participants to the many environmental issues currently facing Tribe's throughout the nation, as well as provided opportunities for pursuing careers in environmental fields. Youth were engaged in activities related to water and air quality, bio-criteria, wetlands, hazardous materials, solid waste, pesticides, and general land stewardship.



Technical Difficulties

The Hydro-Power project was set up in upper Mill creek in September 2003. However, the intake for the system had to be relocated due to inadequate “draw-down” and subsequent water pressure in order to generate enough power to the system. Some technical adjustments still need to be made to the components before it is fully functional, including re-routing and securing the entire 350 foot pipeline to the stream bank.

The Solar Feasibility Project was installed in September 2003 onto a pre-existing system used to power a CDR water monitoring station. Unfortunately, records from the data logger monitoring the solar panel are erroneous due to miscommunication between the data logger and the voltage divider. This situation will be remedied by reprogramming the entire system to include the solar panel, solar radiation sensor *and* water monitoring system.

Conclusion

FY03 marked the sixth complete year of implementation of the PPG Program for TEPA. Despite limitation in staff and various technical difficulties, TEPA was able to meet the challenges of such a diverse work plan. TEPA staff deserves all the credit for meeting and accomplishing a wide range of PPG tasks.